

ASA

BULLETIN

JUNE, 1930

NUMBER 50

| | Page |
|---|------|
| The Role of the Trade Association in Industrial Standardization..... | 3 |
| Organizing New Body to Promote Electrical Standardization..... | 7 |
| Three Engineers Added to A S A Staff..... | 8 |
| Food Research Council Finds Wide Need for Standards and Specifications..... | 9 |
| American Standards Year Book..... | 9 |
| Russell Forbes Finds Inefficiency in Municipal Purchasing..... | 11 |
| Opposition to Central Purchasing by Railways Discussed..... | 12 |
| Durability Tests Prove Value of Varnish Specifications..... | 13 |
| A S A Projects..... | 15 |
| Standardization within the Company..... | 23 |

MEMBER-BODIES

| | |
|---------------------------------|----------------------------------|
| AM. ELECTRIC RAILWAY ASSN. | LAUNDRYOWNERS NAT'L ASSN. OF |
| AM. GAS. ASSN. | THE U. S. AND CANADA |
| AM. GEAR MFRS. ASSN. | NAT'L ASSN. OF MUTUAL CAS. CO'S. |
| AM. HOME ECONOMICS ASSN. | NAT'L AUTOMATIC SPRINKLER ASSN. |
| AM. INSTITUTE OF ARCHITECTS | NAT'L BUR. OF CASUALTY AND |
| AM. INSTITUTE OF ELEC. ENGRS. | SURETY UNDERWRITERS |
| AM. INSTITUTE OF MINING & MET- | NAT'L COAL ASSN. |
| ALLURGICAL ENGRS. | NAT'L ELECTRICAL MFRS. ASSN. |
| AM. MINING CONGRESS | NAT'L MACHINE TOOL BLDRS.' ASSN. |
| AM. RAILWAY ASSN.—ENG. DIV. | NAT'L SAFETY COUNCIL |
| AM. SOC. OF CIVIL ENGRS. | THE PANAMA CANAL |
| AM. SOC. FOR TESTING MATERIALS | SMALL TOOLS GROUP: |
| ASSN. OF AM. STEEL MFRS. | DRILL AND REAMER SOC. |
| CAST IRON PIPE RESEARCH ASSN. | MILLING CUTTER SOC. |
| COMMON BRICK MFRS. ASSN. OF AM. | TAP AND DIE INSTITUTE |
| ELECTRIC LIGHT AND POWER GROUP: | SOC. OF AUTOMOTIVE ENGRS. |
| ASSN. OF EDISON ILLUM. CO'S. | TELEPHONE GROUP: |
| NAT'L ELECTRIC LIGHT ASSN. | BELL TELEPHONE SYSTEM |
| FIRE PROTECTION GROUP: | U. S. INDEPENDENT TEL. ASSN. |
| ASSOCIATED FACTORY MUTUAL | U. S. DEPARTMENT OF AGRICULTURE |
| FIRE INSURANCE CO'S. | U. S. DEPARTMENT OF COMMERCE |
| NAT'L BD. OF FIRE UNDERWRITERS | U. S. DEPARTMENT OF INTERIOR |
| NAT'L FIRE PROTECTION ASSN. | U. S. DEPARTMENT OF LABOR |
| UNDERWRITERS' LABORATORIES | U. S. NAVY DEPARTMENT |
| INTERNAT'L ACETYLENE ASSN. | U. S. WAR DEPARTMENT |

OFFICERS

| | |
|------------------|----------------------------|
| W. J. Serrill | <i>President</i> |
| Cloyd M. Chapman | <i>Vice-President</i> |
| P. G. Agnew | <i>Secretary</i> |
| F. J. Schlink | <i>Assistant-Secretary</i> |

EDITORS

| | |
|---------------|---------------|
| F. J. Schlink | Arthur Kallet |
|---------------|---------------|

The Rôle of the Trade Association in Industrial Standardization¹

by

P. G. Agnew, *Secretary*
American Standards Association

An outline of the functions of the trade association in company, association, and national standardization

Each of the four existing treatises on trade associations devotes a chapter to standardization as one of the principal functions of the trade association.²

Conversely, in its report on standardization, the National Industrial Conference Board³ not only devotes a chapter to the standardization activities of trade associations, but also, and necessarily, makes constant reference to associations in most of the pages of the book.

A large number of trade associations, including the great majority of the stronger and more experienced associations, make standardization one of their principal activities. As indicative of this, over 200 trade associations are officially cooperating in the work of the American Standards Association. A few make it their principal activity. At least one has included the word in its name—the Manufacturers Standardization Society of the Valve and Fittings Industry.

Thus it is evident that the subject assigned to me is one which has engaged a large number of industrialists and associations. This is true not only in this country, but in all industrial countries.

Fortunately, it is everywhere recognized that standardization is a legitimate and constructive association activity. In *Maple Flooring Manufacturers' Association et al. vs. U. S.*, the United States Supreme Court referred to standardization as one of the "many activities to which no exception is taken by the Government and which are admittedly beneficial to the industry and to consumers, such as co-

operative advertising and the standardization and improvement of its product."

The strength of the trade association in the standardization movement depends fundamentally upon two facts. First, standardization is essentially a managerial problem. It is just as much a problem of management to decide whether paint shall be marketed in accordance with specification A or specification B, as it is to decide whether a company shall engage in the paint business or in the grocery business. Second, the trade association is the only means which has yet been found of systematic co-operation between the management of the various units in an industry.

Before entering upon a detailed consideration of the various aspects of the role which the trade association plays in the standardization movement, it will be well to consider the three fundamental stages of the standardization movement, namely, first, in the individual factory; second, in organized groups, such as technical societies, trade associations, and government departments; third, inter-group or national standardization.

The organized standardization movement so far as it has as yet developed, largely begins and ends (in the use of the standards) in the individual company. As the individual company in turn is the unit out of which the trade association is built, let us first consider some of the primary aspects of company standardization.

Perhaps it will facilitate your discussion of the subject to set forth in categorical forms what seem to me to be essential functions of the company and of the association in the movement.

In the Company

I

Executives should be alive to the economic importance of the movement, and in sympathy with it.

Instead of leaving their standardization work as a more or less incidental, and some-

¹ A paper presented before the American Gear Manufacturers Association.

² Jones' "Trade Association Activities and the Law." New York, 1922. Department of Commerce "Trade Association Activities." Washington, 1927. National Industrial Conference Board "Trade Associations, Their Economic Significance and Legal Status." New York, 1925. Kirsh's "Trade Associations, The Legal Aspects." New York, 1928.

³ "Industrial Standardization," National Industrial Conference Board. New York, 1929.

times unconscious, function of the engineering and production departments, industrial executives are more and more providing a definite organization through which the standardization activities of the company are carried out. Nevertheless thousands of executives who, for the welfare of their companies ought to be keenly interested in the subject, are surprisingly ignorant not only of the general trends of the movement, but of the activities in their own companies. A striking illustration of this recently came to my attention. The Vice-President of a company doing a business of more than a billion a year stated that his company did not believe very much in standardization, and was, in general, against it as a policy. As a matter of fact both his industry and his company are pre-eminent examples of the successful use of the standardization of parts as a cornerstone on which the industry has been built up—and are so recognized throughout the world. Further, his company has one of the very finest standards departments of any company in this country, and its standards, which it publishes in a thick volume, are used by its numerous subsidiaries both in their purchases and in their production.

2

Standardization work should be specifically provided for and systematically organized, each department concerned taking an active part.

Conscious systematic standardization is one of the newer tools of management, whose use may be compared with that of modern high speed steel. While steady progress is being made in specific provision within companies for carrying on their standardization activities, we are still far behind Germany in this matter. There, more than a thousand firms have a special organization for carrying on this work; in all of the great companies the standards department reports directly to the general management.

3

The company should cooperate actively in standardization work of the trade association, and through it, in the development of national standards.

4

Conversely, the set-up should be such as to permit an immediate start in the introduction of each new national or trade association standard which concerns the work of the company.

5

The head or heads of the standards organiza-

tion should act as authoritative spokesmen of the firm in standardization work in their trade association, and should keep in touch with the standardization activities of technical societies.

6

The goods the company buys, and the goods it produces for sale should be dealt with by this same general method.

7

All this should be equally true of big firms and of little firms, of manufacturers, of distributors, and of operating companies. In the same general sense it should be true of city, state, and federal governments.

In the Association

8

The association should have effective machinery for promptly getting a real consensus of all of its members concerned with a particular subject.

Associations differ widely in the methods and in the effectiveness with which their member companies function in their standardization activities. In some of the associations the manager, or some other individual, represents the association in outside relations, there being very little actual contact with, or reflection from, the membership. Most associations which develop or adopt standards do so through the medium of a committee which gathers its information from, and reports its recommendations to, the members through the association's regular organ supplemented by correspondence. In others, the technique of arriving at a consensus is much more highly developed. For example, it may be required that all proposed standards, committee reports, and similar matters be mailed to the executive representative of each member-company sixty or ninety days before action is taken, which, in such cases, is generally by the Board of Directors of the Association.

9

One of its educational functions should be to bring home to the executives of its member-companies the economic importance of standardization, and its significance as a managerial tool.

10

In consultation with other groups, and with the national body, it should decide what part of its standardization work is to be handled purely as an association matter on account of

its scope and influence being limited to one narrow field without reflexes upon other industries, and what part needs cooperation with other groups, from the point of view of national standardization through the national body.

A serious error frequently made, especially by less experienced associations, is for the association to attempt to control a standardization project entirely within the association, when other groups have an important stake in the project. The number of standardization undertakings sufficiently narrow in scope to be properly handled without the cooperation of other groups is very much smaller than is generally realized.

Your Association has wisely placed its standardization work on a cooperative basis, working with the consuming and engineering groups in a sectional committee.

Too often there is the attempt to leave competent consuming groups entirely out of the picture. In many cases the attitude is like that of a member of an association representing manufacturers of alarm clocks, who suggested that the association employ a chemist to develop a lubricating oil for them that would last 366 days, and then turn to acid—which scheme would solve two of their problems, compliance with a one-year guarantee, and a continuing market for their clocks.

As a matter of fact, the consumer, if organized and competent, may easily dominate the situation. A few years ago the power companies asked the A S A for a conference to discuss the possibility of standardizing a device used by them in large numbers. The manufacturers' trade association refused even to attend a conference to discuss the matter. A member of the association who was greatly concerned with the situation asked me what I thought of it. I replied that I thought it bad policy for any manufacturers' association to refuse to sit down with their customers to discuss the possibility of standardizing some of the features of their product—that to continue such a policy might lead to the consumers bringing out a standard of their own, which the manufacturers would have to make, whether they liked it or not. Later, the request was renewed, an understanding was reached, and the work is now going forward.

In the last two years there has been a great awakening on the part of consumers as to the possibilities of standardization as a tool in their hands. There are strong indications that this is extending to "across-

the-counter" goods sold to ultimate consumers, and not merely to corporate purchases.

11

It should require responsible representation on the part of its members, on its committees dealing with standards.

The question of representation in such committee work is a specially important one. Most men do not fully understand the meaning of representation, or of the responsibilities which it entails. In sectional committee work the A S A has so frequently found it necessary to call the importance of this matter to the attention of cooperating bodies and their representatives, that it has formulated a brief paragraph for use in such cases. It is the duty of a representative "to keep sufficiently in touch with his organization so that he can correctly interpret its attitude in the development of the work and in participating in decisions in the sectional committee; to keep his organization informed of developments; to act as a leader in the formulation of the policies of the organization in regard to the matters with which he is dealing; and to refer back to his organization questions upon which he feels unauthorized to speak for it."

12

It should provide responsible representatives on the working committees of the national body, and wherever possible back up such representatives by a committee, and then see that its members are kept informed of the acts of their representatives.

13

Technical staff assistance to voluntary committees is generally necessary.

Such assistance generally pays for itself many times over in saving the time of committeemen; minimizing the number of meetings required, etc.

14

The association should systematically promote the use, by its own members and by industry generally, both of its own standards and of those national standards in whose formulation it has taken part.

One of the easiest ways of accomplishing this is by stimulating systematic references to such standards in catalogs, in advertisements in the trade press, etc. Surveys by the association of the extent of use of standards is a most effective means to this

end. The Standards Year Book lists twenty national trade associations which issue symbols, labels, or certificates of approval. Some associations, such as the lumber manufacturers, maintain elaborate inspection services to ensure compliance with grading rules, etc.

15

It should make its decisions in standardization matters, with particular regard to its relation to other organizations and to the national movement, on a broad basis of service to its members and to industry, and not seek to use the movement merely to advance its own prestige.

Newspaper Writers Comment on Standardization— Pro and Con

Frequent discussion of standardization is found in the editorial columns of the daily press. There has been apparent in this discussion an increasing comprehension of the difference between the type of standardization exemplified by A S A projects, and the other type, concerned largely with style factors involving custom or habit and having no scientific or technical basis.

An editorial in the *Albany News* still finds, however, that while standardization has "some advantages" the movement for standardization in America is being carried too far, and

"there is no longer encouragement of freedom of mind. If we like our toast cut thin in the restaurants we cannot have it so because bread is cut by machine and every slice is of the same thickness. That is a minor matter but indicative.

"It is all very well to standardize some things. The efficiency man has his place in the factory in eliminating unnecessary movements and waste of energy and time, but extending standardization to the arts is another story altogether. We can't all be machine made nor machine minded. Standardization that makes life automatic and humans automatons destroys every creative impulse and reduces the whole art of living to a limiting framework, wherein the frame is more important than the picture."

On the other hand we find the eminent critic, Sisley Huddleston, in the *Christian Science Monitor* saying, in one of a series of articles on American cities:

"There is a steady standardization brought about by mass production and universal salesmanship and facilities of travel. Yet I protest against the common use of the word standardization. It is a good thing that all the commodities and amenities of life are distributed broadcast over the whole of America. There is nothing to be said against material standardization; I do not for instance want a different type of telephone from that of my neighbor; I do not want a different kind of typewriter, or automobile, or washing machine, or radio set. Conformity in these things does not imply monotony in the scenic or human characteristics of the different regions of America. In fact, standardization gives more opportunity for the development of individualism. No one can travel about America, even in as limited a way as I have traveled, without being aware of the healthy differences that exist."

Standards Year Book

The Standards Year Book for 1930 has been published by the United States Bureau of Standards and may be obtained from the Superintendent of Documents for seventy-five cents per copy.

The book contains a review of the work of the Bureau of Standards during 1929, briefly reviews the work of similar governmental bodies abroad, and the standardization activities of trade associations and technical societies in this country. The scope of the book will be indicated by the chapter headings, which are as follows: governmental interest in the advancement of simplification and standardization; international standardizing agencies; national standardizing agencies; federal standardizing agencies; the national bureau of standards; municipal, county, and state agencies; general standardizing agencies; and standardizing activities of technical societies and trade associations.

Sustaining members may, if they wish, order the book through the A S A Information Service.

Standard Machine Tool Color

Reference was made in a previous issue of the A S A BULLETIN to the standard gray color of practically all of the machine tools exhibited at the last show of the National Machine Tool Builders' Association at Cleveland, Ohio. This color, now widely adopted, was established as standard by the National Machine Tool Builders' Association.

Organizing New Body to Promote Electrical Standardization

Joint agency will serve as Standards Committee for Electrical Industry and as Advisory Committee of A S A

The formation of a joint agency to guide the standardization activities of the electrical industry was proposed at a meeting of the Board of Directors of the American Institute of Electrical Engineers on January 29th. Action looking to the definite organization of such an agency is now under way. The functions of the proposed agency are indicated by the following resolutions which were adopted by the Board of Directors of the Institute at its January meeting:

"The American Institute of Electrical Engineers, recognizing that other organizations in the electrical industry have the same fundamental interest in electrical standardization as the A. I. E. E., namely, aiding in and guiding the proper development of the electrical industry in the United States, hereby

"RESOLVES: That the American Institute of Electrical Engineers approves in principle the formation of a joint agency of the electrical industry for the purpose of carrying out the necessary standardization activities of that industry.

"It is contemplated that this agency shall have three distinct functions:

"a. The Electrical Standards Committee of the Electrical Industry in the United States of America.

"b. The Electrical Advisory Committee of the American Standards Association.

"c. The United States National Committee of the International Electrotechnical Commission and of any other international organizations for the handling of electrical matters.

"RESOLVES: That the President of the A. I. E. E. is hereby authorized to take the appropriate steps to propose this action to the interested electrical associations, preferably through the Electrical Advisory Committee of the American Standards Association.

"AND FURTHER RESOLVES: That the Institution declares it to be its intention that on the consummation of an organization satisfactory to the Institute for this purpose,

the Institute will in general refer to that body the consideration and approval of standards in which it is interested."

Upon receipt of these resolutions by the Electrical Advisory Committee, Acting Chairman C. R. Harte appointed a sub-committee to draft a plan along the lines suggested. The members of the sub-committee are Dr. F. B. Jewett, Chairman, C. L. Collens, Alexander Maxwell, and L. T. Robinson.

At a meeting of the A S A Electrical Advisory Committee on May 27th, the sub-committee presented a progress report and it was stated that a final draft could be expected in about two months.

An editorial in the *Electrical World* of March 8, 1930, indicates the reaction of the electrical industry to the proposal. The editorial says in part:

"The recent resolution of the A. I. E. E. board assuring cooperation with and participation in a single standardizing agency for the whole electrical industry promises early success of the movement to further the interests of industry by necessary standardization. It does not seem at all necessary that the Institute shall greatly curtail the activities of its standards committee or suffer loss of prestige by acknowledging the veto power of a more representative commercial and engineering group.

"The encouraging feature of the situation is the imminence of a single standardizing agency speaking for and responsive to the entire electrical industry. Support is being given to such a move by the major interests. The thing that remains to be perfected is the attainment of unity of purpose and function without complete sacrifice of all the virtues of agencies of long-standing and uncommercialized professional prestige. Such a structure can seemingly be simple and direct in its mechanism but still allocate to each participant the responsibility which each by history, experience, and inherency is best qualified to administer. Incidentally, the A. I. E. E. standards committee can be useful by instigating discussion of subjects undergoing standardizations."

American Standards Association Adds Three Engineers to Staff

The appointment of Cyril Ainsworth, formerly Director of the Bureau of Industrial Standards of the Pennsylvania Department of Labor and Industry, to direct the national safety code work of the American Standards Association, has been announced by William J. Serrill, President of the A S A. With eight years of extensive experience in state safety code work, Mr. Ainsworth will direct the work of the Association in the establishment of national codes for the guidance of state and municipal governments, industrial organizations, and insurance companies.

Mr. Serrill also announced the appointment to the A S A staff of John Wilson McNair, formerly of the standards department of the American Institute of Electrical Engineers, and Clarence Edward Darling, formerly of the staff of the American Society of Mechanical Engineers. These appointments are part of a program of extension of national industrial standardization activities, which follows the recent refinancing of the A S A. As a result of this refinancing, the Association will have nearly \$500,000 available for its work during the next three years.

Safety code work is one of the most important of the Association's present activities; 50 national safety codes have already been adopted under A S A auspices. The number of codes is steadily growing. Mr. Ainsworth brings to the safety code work experience with the Construction Department of the Pennsylvania Railroad Company and the United Gas Improvement Company of Philadelphia, as well as with the Pennsylvania Department of Labor and Industry. Mr. Ainsworth was also connected with the Chester Shipbuilding Company.

Mr. McNair will devote most of his efforts to electrical standardization projects. In addition to his connection with the American Institute of Electrical Engineers, he has also been associated with the National Electric Light Association and with the United Electric Light and Power Company and the Newport News Shipbuilding and Dry Dock Company. Mr. McNair is a graduate of the University of Virginia where he received a degree in Electrical Engineering. During his senior year at the University he was instructor in strength of materials testing. In the course of his work with the National Electric Light Association and the American Institute of Electrical Engineers, Mr. McNair has had close contact with

practically all branches of electrical standardization, frequently in connection with projects of the A S A.

Mr. Darling has had considerable experience in the field of mechanical standards as a member of the staff of the American Society of Mechanical Engineers. He has also been connected with the Public Service Corporation of New Jersey and with Solomon and Keis, consulting engineers. He will handle especially mechanical and chemical projects. Mr. Darling is a graduate of Rensselaer Polytechnic Institute in Chemical Engineering. A large part of his work with the American Society of Mechanical Engineers was devoted to A S A projects for which the Society is sponsor.

Electrical Record Wants Standard Products

The purchase and sale only of standard products is urged upon the electrical industry by Mr. Stanley A. Dennis, editor-in-chief of the *Electrical Record* in an outline of that publication's ten objectives for the year of 1930. Under the heading "Buy and Sell Standard Products Only," Mr. Dennis says: "The fight against substandard products of all kinds grows hotter and hotter each year, and more hopeless for the makers of the substandard goods. Manufacturers of flexible cord have recently made excellent progress in enabling the industry and the public to identify substandard cord. The same sort of thing must be done sooner or later with reference to all wiring devices and appliances as well. Lasting profits will be built only on standard products. Buy, sell, and install no other kind."

Another of the objectives of the publication in its editorial program is to "push the sale of lower price standard appliances." "Notice, please," says Mr. Dennis, "that the emphasis is on 'standard' as well as on 'lower-priced.'"

Four Thousand German Standards

According to a statement of the German national standardizing body (Deutscher Normenausschuss), 4121 standards had been finally approved by the national body up to December 2, 1929, and 1291 projects were in course of development on that date.

Food Research Council Finds Wide Need for Standards and Specifications

An important discussion of standardization took place at an all-day meeting under the auspices of the New York Food Marketing Research Council, March 21st, in which there were represented The New York State government, the Federal Government, The Port of New York Authority, Department of Public Markets of the City of New York, and Columbia and New York Universities. Much of what was said applies to fields other than foodstuffs.

One speaker, Lawrence Graham, past manager of the commissariat of one of the largest restaurant chains, stated that investigation showed that in the hotel and restaurant field not 5 per cent of customers ever visit the place of business of their suppliers and not one per cent carry out any inspection of deliveries. He emphasized the unfortunate tendencies in the brand identification of goods in that buyers often buy the label rather than the merchandise, a situation which makes plain enough the necessity of actual inspection of product, either in the market or as received.

He emphasized the need for a clear understanding of what the specifications might call for with a given food and a mutual recognition on the part of both buyer and seller of the goods upon the market which fulfilled these specifications. He considered a more extensive use of specifications highly desirable and feasible, and regarded the situation in the food field as one calling for generally increased standardization activities on the part of associations representing consumers; for example, hotels, schools, hospitals, and other public institutions.

Miss Alice Edwards, representative of the American Home Economics Association on the A S A Standards Council, emphasized the im-

portance, from the standpoint of the consumer, of discriminating between essential and non-essential qualities, which tend to become confused in advertising and salesmanship and needed always to be kept quite distinct. She showed how specifications, if badly drawn, might leave out essential points to which one might have reason to give considerable weight in judging an actual purchase.

She regarded the problem of more precise and

straightforward nomenclature as vital to an improvement of the consumers' relation to the problem of purchase. Definite nomenclature, free from evasion and misclassification, combined with relevant and true description in sales material and advertising were, in her view, absolutely necessary if the situation is to be improved for the household buyer. Much depended, moreover, upon labels and their proper and careful use by consumers.

Dr. Arthur E. Albrecht, head of the New York City office of the New York State Department of Eggs and Markets, referring to the egg grading law, which is one of the most important regulatory

American Standards Year Book

The 1930 issue of the American Standards Year Book has just been published by A S A and members who wish to have extra copies of the Year Book may obtain them from the A S A office. The book is similar in form to previous A S A year books. It contains for the first time an alphabetical index to standards and projects, which was added at the suggestion of Mr. Lewis De Blois, Director of the Safety Engineering Division of the National Bureau of Casualty and Surety Underwriters. The project section of the Year Book includes 166 projects which are represented by approved standards, and 171 projects for which standards are in course of preparation.

The Year Book includes a foreword by George B. Cortelyou, President of the Consolidated Gas Company. A report by William J. Serrill, President of the A S A, on the activities of the past year, is also included.

activities of the department, stated that it was found that the use of brand names gave the consumer no help unless those brands were linked with definite and recognized grade names, in order to give them sufficient definiteness so that they might provide a basis of selection, and a ground of action in case of fraud or misrepresentation. He instanced interesting illustrations of the misleading nomenclature which grows up for lack of definite action on the part of consumers to obtain sharp definition of terms. Invalid eggs, as sold in New York, he said, might mean, from his experience, eggs for the sick or eggs too far gone to be eaten; likewise, certain

butter styled "home-made" was the least desirable that one could possibly select, since it represented butter remanufactured from rancid materials, and the only thing which justified the term "home-made" was that it was made in a small and somewhat irregular plant, rather than in large and well-managed factories maintaining standards of cleanliness and workmanship.

As to the effect of lack of standards upon price spread, Dr. Albrecht mentioned that butter scoring all the way from 84 per cent to 93 per cent was found on investigation by the State Department of Markets, to be selling at the same price; and butter of a single grade—93 score—sold from 42 cents to 74 cents; a situation evidently impossible were it not for the public failure to understand and follow grades in consumers' purchases. This, in turn, was due—as was brought out by more than one speaker—to a general lack of interest in grades and inspection by dealers, and the willingness on their part to buy by rule-of-thumb methods, following custom and wont, rather than the available science and techniques. It was agreed that there was little hope for consumers becoming educated as to grades and quality so long as the middleman showed the present degree of indifference to the subject.

Lack of Standards Injures Broom Industry

A trade which has suffered severely from lack of standards and, hence, declining public acceptance of its product, is that of corn brooms. So variable is the quality in this field that household brooms of comparable size and appearance may retail at from 39 cents to \$2.00; a few are sold as low as 29 cents. Brooms retailing all the way from 39 to 69 cents, and from 79 cents to \$2.00, respectively, look so much alike that the ultimate consumer will be quite at a loss to distinguish the worst from the best.

These difficulties, which have been very costly to the trade, result from a practically complete lack of standards upon the basis of which any one can make himself understood in describing either the raw material or the finished product. By virtue of this situation, there exists a general state of degraded production, through which consumers are discouraged from using broom corn products and tend to go over to other implements for sweeping and cleaning.

Although the annual production of the industry totals about \$35,000,000, it is divided among approximately 500 manufacturers and the output of the largest is perhaps only 5 per cent of the total.

Standardization Fundamental in Rationalization Program

European discussions of the rationalization movement are referring constantly to standardization of product to reduce manufacturing costs and assist in the organizing of production upon a definite program. Distinction is made moreover between rationalization and mere amalgamation which, it is recognized, does not provide the fundamental advantages that can accrue when standardization, scientific research, the installation of the most modern plants and tools, and the closing down of inefficient producing units are followed in a carefully reasoned manner.

Recognition is also given to the fact that the fear of the consumer that rationalization may result in monopolies to increase prices must be overcome by a reduction in production costs and selling prices to stimulate demand. "Ultimately," says one speaker on this subject, "these selling prices must depend entirely on the brains which can introduce efficient production methods, standardization of product, increased rate of output per man unit and elimination of waste." It is felt that ultimately rationalization should increase the surplus for distribution between capital and labor and effect a reduction in the selling prices of the necessities of life, representing an increase in the exchangeable value of labor and affording a higher standard of living."

New V D E Handbook

The new edition of the V D E Handbook issued by the German Electrical Society is now available, and copies may be purchased through the A S A Information Service at \$6.50 per copy. This 1100-page book contains the German national standard specifications, rules, and recommended practices in the electrical field.

Too Many Steel Specifications

A paper read before the Institution of Automobile Engineers in London pointed out that there were many steel specifications for automobile and aero use and that both manufacturers and users evidently desired to reduce the number. Most favorable comments were made on the American practice, established by the Society of Automotive Engineers, of issuing steel specifications, with others, in the form of a handbook revised every six months.

Russell Forbes Finds Inefficiency in Municipal Purchasing

According to a report reviewed in *The Purchasing Agent* for March, 1930, by Russell Forbes of the Municipal Administration Service in New York, the city of Kansas City, Mo., furnishes an example of a complete failure to co-ordinate municipal purchasing with modern tendencies both in business and technology. Says Mr. Forbes, referring to the report (by the Kansas City Public Service Institute) on the city's purchasing methods and procedure:

"If there be any error of omission or commission, which is possible in purchasing and which is not found in the purchasing system of Kansas City, the writer has yet to hear of it. This report shows that the establishment of centralized purchasing in 1908 has resulted only in the centralizing of order-placing. . . ."

Many criticisms of specification purchasing are based upon the assumption that the non-use of specifications by purchasers is favorable to manufacturers and dealers. In Kansas City, at least, this is not the case, as is seen in the following, where it appears that the absence of specifications permits of competent producers and middlemen being discriminated against, in connection with the city's orders, without hope of redress or adjustment.

"In many cases, the using departments indicate on the requisition, not only the goods required, but the source of supply and the price to be paid. The purchasing agent copies this information on the order and addresses it to the 'lucky' dealer. Not the slightest attempt has been made to adopt or use written specifications for the bulk of the city's requirements. Many orders specify 'a bushel of apples at \$2.00' or 'two dozen straw brooms at \$8.00,' for example; such description is loose, to say the least. Since the city lacks even the semblance of an inspection system, there is no way to compel the vendor to deliver high quality on such orders. . . . Very little effort is made to stimulate competition. Many reputable vendors will no longer deal with the city because favoritism has consistently been shown in the past."

In Schenectady, N. Y., a report by the Schenectady Bureau of Municipal Research, also

reviewed by Mr. Forbes, shows that conditions very similar to those in Kansas City were found, "centralized purchasing" being used as the cloak for favoritism and inefficiency. In Schenectady, however, there was an additional difficulty in that state laws and the city charter did not permit real centralization of purchasing responsibility, whereas in Kansas City the legal framework is satisfactory and the difficulty is lack of administrative efficiency.

It is almost axiomatic, in the present stage of purchasing procedure, that the use of specifications is fundamental to the operation of an efficient and aggressive purchasing department.

Quality Standards for Shirts

The A S A BULLETIN has referred to the basic influence of standards and specifications in eliminating the widespread and persistent degradation of quality of commercial products that comes about through sharp and unreasoning competition in certain trades. Yet another corrective action in a case of this kind has followed the standardization route, as shown by an article: "Shirt Makers Planning Guild," taken from the *New York Times* of January 3rd:

"Plans are under way to combat the 'low price shirt evil' through cooperative action by leading manufacturers of fine shirts, it was learned here yesterday. . . . Tentative plans call for the banding of manufacturers into a guild with a central bureau to conduct advertising and educational activities. A hall-mark to signify adherence to minimum standards of quality has been suggested. The organization is eventually expected to include yarn producers and fine shirting manufacturers."

Standardized Truck Design

Standardization has been made a keynote in chassis, body, and cab design of the entire line of General Motors Corporation trucks according to an article in *Motor World Wholesale* for March, 1930. "Although there are 118 different types of trucks, only six frame assemblies, five transmissions, five front springs, three front axles, and three radiators are used."

Opposition to Central Purchasing by Railways Discussed

A somewhat unusual form of opposition to standardization appears in the following editorial from a national business magazine:

".....And so when a business visitor comes into the editor's office he is greeted with the question:

"Well, what's wrong with your business?"

"Usually it develops that there isn't much wrong anyhow, except that sales and profits and growth are not as great as the visitor wishes.

"But the other day a man whose chief interest is in selling things to railroads brought out two definite troubles in his industry.

"For one thing," he said, "some of us are worried about reports that some bankers are discussing the establishment of a sort of clearing house for the sale and purchase of railroad supplies. We, of course, see a strong argument against centralization of railway purchases. Every step in that direction tends toward over-standardization of design, exclusion of new men from the business, stressing of price as against quality, service, and dependability, and the slowing down of progress.

"The other thing is that while some of the railroads appear to be getting away from manufacturing their own necessities there are others which still harbor the idea that the roads should forego the advantage of buying in a highly competitive field and go on adding to their investment in manufacturing plants under conditions where labor costs are increased by governmental influence."

"The troubles of this business are paralleled by the troubles of how many other industries? The notion that the salesman, even though he be an engineer, is an extravagance, impresses consumers and stockholders who do not think the problem through, just as the notion that it is cheaper to do a thing yourself than to have it done by an expert always finds supporters."

Informed Salesmen Needed

We may be sure that this is a superficial analysis of the problem. No one has seriously alleged that salesmen who know their product and its uses, and the needs of their purchasers,

are superfluous or extravagant. Such resentment as exists against improper and uninformed salesmanship is justified by the attitude of men in this field whose anxiety to make a sale—and this is likely to be the fault of the organization behind them—is not mitigated by a proper regard for the customer's real needs, in the light of what their employers' product supplies. As one nationally known advertising and publishing executive has said, if he were to buy all of the printing and publishing equipment which is urged upon him, with what would appear to be convincing proof of its unparalleled economy, he would go bankrupt within a year.

Objections to the centralization of railway purchases and expert consideration of economically sound price in relation to quality, service, and dependability, are objections in effect to the use of special knowledge and skill which come to those and only to those who are in a position to centralize information and technique.

Specialization in Purchasing

If specialization is good in manufacture it may be reasonable to assume that it is good in purchase. If skilled technical knowledge is desirable in design it may be equally indispensable in selection of commodities for use in manufacture. If railroad supplies cannot be bought better in a central agency able to provide specialized consideration for each major group of supplies, instead of by one man who must be Jack-of-all-purchases, then the whole principle of business and technical organization, of more intelligent inter-relation of knowledge and skill and cost reduction through the principle of division of function, is to be re-examined from its foundations. Such rejection of the results of wide industrial experience is not necessary, however, unless one believes, with the writer of the editorial quoted, that organization to sell is sound, commendable and praiseworthy, whereas organization to buy is something to be condemned, discouraged and evaded.

In connection with this discussion it is significant that in an essay contest among the younger men in the Purchase and Stores Division of the railroads, one of the chief recommendations made by the contestants is the centralization of railway purchases. Reference to these essays was made in A S A BULLETIN 49, December, 1929.

Durability Tests Prove Value of Varnish Specifications

There have been many discussions of the correlation between the effective recognizable quality of a product and the requirements set down in specifications, but only rarely do these arguments result in a careful, scientific examination of the correlation between standard tests laid down in specifications and the practical performance of the goods. This may perhaps be explained on the ground that specification engineers are likely to be so well convinced of the soundness of the scientific method as against the method of private, and necessarily variable, opinion in the selection of competing articles, that they rarely feel justified in expending the effort and materials required to prove a point which in general they are pretty likely to regard as unassailable, like the difference in quality between real linoleum and felt-base products of similar appearance.

A recent study recorded by the Bureau of Standards in its *Journal of Research*, for February, 1930, reports durability tests for spar varnishes in which, among various verifications that were made between actual performance under natural exposure conditions, and performance under test, there was specifically studied the relation between outdoor exposure tests and results of the standard tests for conformity to Federal specification No. 18b. For example, the researcher, C. L. Came, finds

"of the 24 poorer varnishes in the exposure test only 4, Nos. 49, 50, 12 and 26, had a kauri reduction value of 50 or more. This relationship indicates that the 50 per cent kauri reduction requirement of Federal specification No. 18b for spar varnish will generally keep out the material of poorer quality."

Test Performance Reliable

The specifications require 50 per cent or more on the kauri reduction test, which is carried out by adding to the varnish a certain amount of kauri gum solution, flowing a film of the mixture on the metal, baking for 5 hours at 95 to 100° C, cooling, and bending over a 3 mm. rod. The film must show no cracks on bending.

"Of the poorest 15 varnishes as shown by the outdoor exposure, none passed a kauri reduction test of over 40 per cent, and of the 15 best varnishes as shown by the outdoor exposure test, all but 2 passed

a kauri reduction of 60 per cent or better...

"Of the 26 varnishes showing up as the best of the 50 varnishes exposed outdoors 19 passed the specifications in every respect and only 1 failed on the kauri reduction test. Of the 24 varnishes classified as poor on the outdoor exposure test only 4 passed the specification in all respects, and of the poorest 15 none passed.

"In a previous outdoor exposure test of 75 commercial spar varnishes completed in the fall of 1928, 30 varnishes of the 56 found to have good durability passed the requirements of Federal specification No. 18b in every respect, and of the 26 which did not pass only 7 failed on the kauri reduction test.

"Of the 19 varnishes classified as poor 12 failed to pass the kauri reduction test and only 1 passed Federal specification No. 18b in all respects." And of the conclusions reached, one is:

"Results of exposure tests show that the commercial spar varnishes which pass the requirements of Federal specification No. 18b are above the average in quality."

A copy of the full paper is available for reference to any one interested in tracing these correlations more carefully, or in studying the general degree of verification that has been reached in relation to the government's varnish specifications.

Compressed Air Standards

The 1930 edition of the "Trade Standards" adopted by the Compressed Air Society has been received at the A S A office. Copies may be borrowed for review through the Information Service or purchased for fifty cents either directly from the Compressed Air Society, 90 West Street, New York City, or through the A S A office.

S A E Handbook

The 1930 edition of the S A E Handbook has been published by the Society of Automotive Engineers. Copies may be obtained either directly from the S A E, 29 West 39th Street, New York, N. Y., or through the A S A office. The price is \$5.00 to non-members and \$2.50 to members of the S A E.

Modern Methods Advocated in Specification Writing

The growing tendency toward specifications on a basis of performance rather than of details is noted favorably in a recent editorial in the *American Machinist*.

"Standardization with all its possible advantages can be so misused as to be a positive detriment to all concerned. For, like nearly all other factors that enter into business, it must be used intelligently to be really beneficial," says the editorial. "The difficulty in many cases arises from the effort to standardize too many items and to specify details instead of the few important points that vitally affect results.

"This tendency to standardize details prevails to a large extent in the Army, Navy, and other government specifications. The same tendency is, however, noticeable in the conduct of some very large private concerns, and is equally detrimental in all cases."

Superlatives Dangerous

Other types of criticism of specifications are also worthy of study. A recent criticism of specifications of a governmental group received from the representative of the producing trade raises a point that it is well for standards engineers and specification experts to keep in mind.

"We note that the new draft...continues to specify that...shall be painted with *best* linseed oil. Superlatives are always dangerous and it seems like a loose way of preparing specifications in these days of testing laboratories, etc. The use of the term 'best' linseed oil reminds one of the small boy's answer to the query as to his belief in Santa Claus that 'there ain't no such thing.' From an intrinsic standpoint and chemically as well, the best linseed oil for painting purposes is high in iodine value and low in acid number, but little of this kind comes to market, whereas oil that reverses the above formula is more apt to constitute the commercial grades available today and in use by the paint and similar industries.

"This comment...is only used to point out a fundamental fault in specification writing. If the specifying agency intends by the term 'best' linseed oil, an oil unadulterated with other vegetable or mineral oils or spirits, it would seem to us that the word 'unadulterated' or 'pure' instead of the word 'best' would better serve the purpose."

A large proportion of all specifications contain such clauses as "best grade," "first class coating material," "free from impurities and adulterants;" when in point of fact such terms are never accurately defined or clearly understood, and dispute as to compliance of deliveries with specification requirements must be adjudicated through the arguments of experts before a jury, or in some other way which is satisfactory to no one.

Over-Rigid Clauses Disregarded

It is recognized that, in many cases, the inclusion of some such clause may be necessary in order to permit of remedial action on the buyer's part in case the delivered product is deficient in some way which may easily enough elude the vigilance of the specification writer, who naturally cannot cover every possible type or point of deficiency. These loose requirements in such cases do permit of redress when a gross deviation from recognized good practice has taken place, as, for example, in the leaving of a rough scaly surface on a bearing or journal, or a paint job which shows streaks or scratches, or other defect which one might not have thought of providing against in detail specifications. It will be evident, however, that the use of such comparisons requires discretion and in fact in many cases the inclusion of obviously over-severe or rigid clauses or specifications would practically amount to an invitation to disregard or evade the requirements as set down by the specification writer.

An illustration of the tendency away from general clauses is evident in a recent inquiry which was made to the A S A, requesting a specification to define the quality of finish in grinding. In this case, an A S A staff engineer was able to indicate what appeared to be practical lines of approach for a specification designed to take out the element of personal judgment or bias from the inspector's decision as to whether a given finished surface conforms with "good practice."

Research Pamphlet Available

Standards engineers will be interested in a pamphlet, "Research—A Paying Investment," issued by the Division of Engineering and Industrial Research, National Research Council. The close relation of research to standardization is coming to be well understood, and every engineer interested in standards and specifications will find this analysis of 800 replies to a recent questionnaire on research of distinct practical value. Copies may be had from the National Research Council at 29 West 39th Street, New York, N. Y.

A S A PROJECTS

New Report on Bursting Tests on Cast Iron Pipe Fittings

A report on "Bursting Tests on Fittings" by M. L. Enger and W. W. Lansford has just been published and is available for review through the A S A Information Service. This is the third progress report on the subject of cast iron pipe investigations being conducted at the Engineering Experiment Station at the University of Illinois. The investigation is being carried on in connection with the work of the A S A technical committee on Specifications for Cast Iron Pipe and Special Castings (A 21).

Elbows Cause Difficulties

The report, which contains numerous tables, diagrams, and photographs showing the results of the tests says, in describing the results:

"The A S M E fittings were tested with flanged joints, and no difficulty was encountered except in the case of the elbows. The first 12-in. elbow was tested without any attempt to hold the blind flanges except by the bolts in the flanges. The elbow failed at a low pressure (540 lb. per sq. in.) by pulling off one of the flanges. In testing the other two elbows an attempt was made to reduce the bending stresses by applying heavy thrusts against the center of the blind flanges. However, the failure, in each case, was by pulling off the flange although higher bursting strengths were developed (1025 and 920 lb. per sq. in.). It is evident that the weakness of the A S M E flanged elbow is in the junction of the flange and the body of the fitting. In the second series another group of 12-in. flanged elbows were tested in which a fillet had been added back of the flange. These elbows were tested without applying a thrust against the center of the blind flanges and the failure occurred by bursting along the inside of curve at pressures of 1055, 1010, and 960 lb. per sq. in. It is shown, therefore, that the addition of a very small amount of metal is surprisingly effective in increasing the strength of this fitting.

"At the meeting in January a question was raised concerning the effect on the strength of the fitting of using Victaulic joints instead of bells or flanges. In order

to answer the question, three 12 x 12 in. A S M E 125-lb. flanged crosses were prepared for Victaulic joints by turning off the flanges. These were burst at pressures of 360, 485, and 495 lb. per sq. in. The first specimen was no doubt defective and should be thrown out, making the average bursting strength 490 lb. per sq. in. as compared with an average bursting strength of 647 lb. per sq. in. for the same type of fitting with flanges. It is evident therefore that the flange does add materially to the strength of the fitting, and it may be expected that bells would have the same effect to a lesser degree.

"The short body fittings are shown to be a little stronger than the corresponding A W W A fittings. The A W W A fitting has long radius curves at all angles introducing flat areas which cause bending stresses to be added to the tensile stresses. The A W W A 12 x 12 in. curves in particular have large flat sides which were blown apart nearly an inch before failure occurred.

Suggestions for Increasing Strength

"The lateral was the weakest of the 12-in. A S M E 125-lb. fittings. This is no doubt due to the relatively small area of metal at the crotch to resist the water pressure on the large tributary area. This fitting is a particularly difficult one to strengthen. Ribs carried across the crotch would undoubtedly help. It may be possible that a thickening of the walls opposite the crotch would be effective and easier to cast, although more metal would be required.

"Without intending to do so, information concerning the strength of blind flanges was secured due to the failure of three blind flanges during the tests at pressures of 450, 490, and 500 lb. per sq. in. The practice of putting the ribs on the outside of blind flanges is a mistake because the ribs are not effective in carrying tensile stress. The practice of dishing blind flanges outward is also wrong because this introduces tensile stresses. To be effective the ribs and the dish should be turned to the inside."

Pressure and Vacuum Gages to Be Standardized

The establishment of national standards for pressure and vacuum gages was recommended at a general conference held in New York City on May 15th under the auspices of the American Standards Association. Thirty-five representatives of manufacturers and users of pressure and vacuum gages and of technical, governmental, and safety bodies having an interest in such gages were present at the conference.

In accordance with the recommendations of the conference, the scope of the committee's work will include nomenclature and definitions; rules and specifications for installation and use; method of testing; method of expressing allowable errors; accuracy requirements; capacity ratings; connections; indicator hands and stop pins; dials and graduations; bezel rings and attachments; case sizes and mounting holes.

The conference favored, in general, the development of specifications which would tend to unify the external features of gages of the indicating types, and permit a reasonable amount of interchangeability between the various makes.

Representatives of the steam power interests, petroleum refineries, traction interests, gas and chemical interests were particularly eager to have the standardization undertaken. One group pointed out that at present it was necessary for them to carry in stock 72 gages of the same size in order to meet the demands of those to whom they sold their product.

The following organizations were represented at the conference: American Electric Railway Assoc., American Gas Assoc., American Institute of Chemical Engineers, American Institute of Refrigeration, American Marine Standards Committee, American Oil Burner Assoc., American Petroleum Institute, American Society of Marine Engineers, American Society of Mechanical Engineers, National Association of Purchasing Agents, National Board of Boiler and Pressure Vessel Inspectors, National Electric Light Assoc., New York State Department of Labor, Refrigerating Machinery Assoc., Scientific Apparatus Makers Assoc., Underwriters Laboratories, U. S. Bureau of Standards, U. S. Department of Commerce-Steamboat Inspection Service.

The following manufacturers of gages were represented: Acme Gauge and Instrument Co., Ashton Valve Co., Brown Instrument Co., Consolidated Ashcroft Hancock Co., Crosby Steam Gage and Valve Co., Foxboro Co., James P. Marsh and Co., Motor Meter Gauge and Equipment Corp., C. J. Tagliabue Mfg. Co., and Taylor Instrument Co.

Safety Code for Grandstands to Be Established

Initiation of a project for the establishment of a safety code for grandstands has been approved by the A S A Standards Council. The project was requested by the Department of Labor and Industry of the State of Pennsylvania and by the Belmont Iron Works and the Wayne Iron Works.

Mr. C. S. Wetzel of the Wayne Iron Works, in making the request on behalf of his company, said:

"There is, in so far as we know, no standard in existence at present. Accidents are not uncommon, and with the greatly increased interest in athletics, there is a pressing need for a standard, for design, manufacture, and inspection.

"As we see it the standard code should apply both to permanent and portable structures. The former we have found oftentimes are erected without any attention to strength and durability, the only object being to seat a large given number of persons at small expense. The latter are subject to the same defects, and, in addition, constant assembly and dismantling, many times by inexperienced workmen, carry with them increased hazards."

The seriousness of the accident situation may be judged by the fact that one insurance company discontinued the insuring of wooden grandstands following disastrous experiences with such grandstands ten or fifteen years ago.

Screw Threads for Lamp Sockets and Bases

A draft of the proposed American Standard for rolled threads for screw shells of electric sockets and lamp bases (C 44) is being circulated by the technical committee on this project and is available for review through the A S A office.

The standard covers the dimensions, tolerances, and gages for rolled threads of Edison type screw shells intended for use in the manufacture of lamp bases and plugs, and of lamp and fuse holders.

Mr. Ralph E. Meyers, Chief Engineer, Westinghouse Lamp Company, Springfield, New Jersey, is chairman of the technical committee, which is under the sponsorship of the American Society of Mechanical Engineers and the National Electrical Manufacturers Association.

A S A Blanket Project Endorsed by Dealers

The A S A project for the establishment of standard specifications for blankets has met with widespread approval among manufacturers and dealers. In a series of interviews with representatives of the trade, the *New York Daily News Record*, a leading textile journal, has found enthusiastic endorsement of the work of the A S A committee.

Mr. E. W. Hasenjager, department manager of the Strouss-Hirshberg Company, Youngstown, Ohio, told the *News Record*:

"I think the standard size list would be suitable to almost every retailer. I have also had in mind for several months whether or not it would be possible to have the manufacturers put on their labels exactly how much wool there is in their blankets as there are a lot of blankets on the market which are part wool, whether they contain 5 per cent, 10 per cent, 15 per cent, or 25 per cent wool.¹ It seems to be a hard proposition to convince your customer just what per cent of wool is in the blankets. . . . We know our customers who have bought a certain blanket the same as we carry in stock, but purchased at another store and represented to them as being a 15 to 25 per cent wool blanket. Therefore, we would like to make the suggestion as above, if the blankets could be labeled, telling the general public just exactly how much wool is in the blanket, it seems to me it would eliminate a lot of dissatisfaction among the consumers."

Dr. W. P. Morrill, director of the Maine General Hospital and chairman of the standardization committee of the American Hospital Association, has been appointed a member of the technical committee on "Specifications for Blankets" (L 6).

Construction Code

The American Institute of Architects' safety code for construction work, which is being considered by the Sectional Committee of the A S A in connection with the development of a national construction code, has been adopted by the New Jersey Legislature. It was approved by the Governor on April 18th.

¹ The actual wool content of cotton-wool mixed, commonly called part wool, blanket runs from 1 to 15 per cent, with an average around 4 per cent; whereas according to a study made by interests in the trade, the average consumer assumes part wool means 25 per cent or more.

A S A Approves Revised Code for Woodworking Plants

A revision of the American Tentative Standard Safety Code for Woodworking Plants (O 1-1930) has now been approved and will be published shortly. An important part of the revision is based upon a recent investigation of safe limiting speeds for circular saws. Since the publication of the earlier edition of the code, there has been a decided tendency toward the higher speeds made possible by the use of alloy steels. The International Association of Industrial Accident Boards and Commissions and the National Bureau of Casualty and Surety Underwriters, are the sponsors for this project. Mr. L. W. Chaney of the Department of Labor, Washington, D. C., is chairman of the committee which developed the standard.

To Standardize Pipe Traps

At the organization meeting of the sub-committee of the A S A technical committee on the standardization of plumbing equipment (A 40) the decision was made to divide the work among five sub-groups. These sub-groups will cover: brass traps, lead traps, vitreous china traps and interceptors, catch basins and miscellaneous traps, respectively. Mr. A. R. McGonegal was elected chairman of the sub-committee on pipe traps and Mr. G. W. Martin, secretary. The technical committee on the standardization of plumbing equipment is under the sponsorship of the American Society of Sanitary Engineering and the American Society of Mechanical Engineers. There are at present six other sub-committees of the general committee on: code for plumbing, staple vitreous china plumbing fixtures, staple porcelain (all clay) plumbing fixtures, enameled sanitary ware, traps and standards for brass plumbing products.

Cast Iron Pipe Flanges

A draft of the proposed American Tentative Standard for cast iron pipe flanges and flanged fittings for maximum working saturated steam pressure of 25 lb. per sq. in.; for maximum gas working pressure of 25 lb. per sq. in.; and for sizes of 36 inches and smaller for maximum non-shock working hydraulic pressure of 43 lb. per sq. in., is available for review, through the A S A Information Service. This draft has been approved by the A S A technical committee on pipe flanges and fittings.

Standards Proposed for Spindle Noses and Chucks

Twenty-nine prints containing the proposed American Standards for spindle noses and for chucks are being circulated for review and criticism, and copies may be borrowed from the A S A office. These proposals were prepared by the sub-committee on spindle noses and the sub-committee on chucks of the A S A general committee on Small Tools and Machine Tool Elements.

In submitting the drawings, Mr. J. E. Lovely, Chairman of the technical committee on Chucks and Chuck Jaws, adds a number of comments, a few of which follow:

"It is suggested that the size of spindle to be used on a given machine be determined by the size of standard chuck the machine would normally take. The committee hopes that the proposed standard chucks shown by these blue prints will cover the requirements of the industry and that if larger chucks are desired on a given size spindle than the ones listed that they may be mounted by using a simple flat adapter.

"Considerable study of chucks in service was made when the design for the cross slots, radial tongues, and size of tapped holes was being considered for the master jaws in chucks for the 6 inch, 8 inch, and 11 inch noses. It was found that the average chuck 15 inch and larger which had a cross slot only $\frac{1}{8}$ inch deep did not give enough bearing area for the mating tongue on soft jaws, for in a larger number of cases even on ordinary work the bearing pressures employed crushed these soft tongues when of this depth. For this reason the new proposed standards call for cross slots $\frac{9}{32}$ inch deep in master jaws on chucks 15 inch and larger.

"You will notice that the design of the master jaws is one which eliminates the loose key in the top jaws as this loose key was considered an objectionable feature.

"The radial tongue in the master jaw was made purposely narrow so that the mating slot made in the top jaw would not cut away an appreciable portion of the bearing for the cross tongue.

"You will find the screws holding the top jaws to the master jaws are larger than has heretofore been common practice. The sizes shown, however, were selected because smaller screws have given trouble due to breakage even when made of the best material, particularly on long jaws on heavy and severe work.

"The tops of the master jaws are made to project above the face of the chuck so that special top jaws of any width may be mounted without interfering with the face of the chuck.

"It was not considered necessary to standardize on the width of the jaws, but, in general, jaws of heavy duty chucks should not be narrower than twice the diameter of the socket head screws which will be used for fastening the top jaws to the master jaws.

"The master jaws for both hand-operated and air-operated chucks are made in such a manner that special top jaws are interchangeable on all types of chucks of the same outside diameter. In order to secure this interchangeability the gripping position of any set of special top jaws should be such that when in the gripping position the outside radius of the master jaw is in line with the outside radius of the chuck. The position of the master jaws in the open position on air chucks is such that the jaw will open $\frac{1}{8}$ inch on a radius beyond this position to allow for insertion of the work.

"It will be noted that the dimensions of the master jaws on chucks for the 11 inch spindle nose are such that a given set of top jaws may fit all of these chucks."

Fuel Oil Committee Holds Organization Meeting

The organization meeting of the A S A technical committee on the standardization of fuel oil was held on March 19th. Mr. Lee Schneitter of the Electric Bond and Share Company was elected chairman and Dr. A. E. Flowers of the De Laval Separator Company of Poughkeepsie, N. Y., was elected secretary.

Two sub-committees were appointed to initiate the development of standard specifications for domestic and industrial fuel oil and for Diesel fuel oil.

The scope of the committee's activity, which had been agreed upon at an earlier conference is: "the preparation of specifications for fuel oil, including domestic, industrial, and Diesel fuels, and excluding oils with a flash point below approximately 100° F. Tag. closed cup, oil burned in wick burners and oil for gas-making purposes."

The sub-committee on domestic and industrial fuel oils, of which Mr. C. C. Ross of the Philadelphia Navy Yard is chairman, and Mr. H. F. Tapp, Secretary of the American Oil Burner Association is secretary, met after the meeting of the technical committee and voted to review the Federal specifications as a basis for the development of a proposed American Standard.

The sub-committee on Diesel fuel oil will be under the chairmanship of Mr. L. H. Morrison of *Oil Engine Power*, with Mr. W. H. Butler of the Standard Oil Company of New Jersey as secretary.

Graphical Symbols for Electric Power and Wiring

A report on Graphical Symbols used for Electric Power and Wiring has been issued by the A S A technical committee on this subject and published by the American Institute of Electrical Engineers, for the purpose of obtaining criticism and suggestions prior to the submittal of the standard for approval by A S A.

The report, according to the introduction, "comprises graphical symbols used for one-line diagrams and for complete diagrams of electric power apparatus, instruments and relays, and system-connecting diagrams. The symbols are limited to apparatus usually met with in electrical power engineering such as major electrical equipment in power houses, substations and transmission and distribution systems and to system wiring diagrams. They are not intended to cover communication, railway or other allied branches of electrical engineering.

"Basic symbols which seem to have widespread use and application—and only such symbols (with few exceptions)—are given. It is recognized that the symbols presented do not cover all types of equipment, but it is believed that with relatively small additions to the basic symbols the variations in practice can be accommodated. This is especially true of the complete-diagram symbols for rotating apparatus and transformers where it seems impracticable to show all possible connections of parts. Symbols for industrial power and switchboard control apparatus have been omitted as wide divergence of opinion and practice has been found to exist. Where, also, a wide diversity of opinion was apparent concerning symbols that would probably not be in common use, such symbols have not been included in the list. An attempt was made to include only symbols that are simple in design in order to facilitate rapid drafting.

"In practice, notes in abbreviated form are often inscribed adjacent to the symbol figure. These notes give further information concerning the characteristics of the apparatus. A suggested list of such supplemental descriptive data under the sub-heading 'Optional Notes' is given with certain symbols."

Included in the report are symbols for power apparatus, symbols for instruments and relays, and general symbols for maps and connection diagrams.

Mr. A. L. Harding of the Electric Bond and

Share Company is chairman of the sub-group which prepared the report. This sub-group is part of the A S A technical committee on Scientific and Engineering Symbols and Abbreviations, under the sponsorship of the American Association for the Advancement of Science, American Institute of Electrical Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, and the Society for the Promotion of Engineering Education.

Copies of the report may be borrowed for review through the A S A office.

New American Standards

The following standards were approved by the American Standards Association between January 1 and May 1, 1930:

| | |
|-----------|--|
| A5-1930 | Method of Test for Toughness of Rock, American Standard— <i>25 cents</i> |
| A26-1930 | Method of Sampling Stone, Slag, Gravel, Sand and Stone Block, for Use as Highway Materials, American Standard— <i>25 cents</i> |
| A37a-1930 | Method of Test for Penetration of Bituminous Materials, American Standard— <i>25 cents</i> |
| A37b-1930 | Method of Float Test for Bituminous Materials, American Standard |
| A37c-1930 | Method of Test for the Determination of Bitumen, American Standard— <i>25 cents</i> |
| A43-1930 | Specifications for Putty, American Tentative Standard— <i>5 cents</i> |
| B3a-1930 | Annular Ball Bearings Single Row Type, American Standard |
| B3b-1930 | Ball and Roller Bearings Wide Type, Amer. Recommended Practice |
| B5e-1930 | Cut and Ground Thread Taps, American Standard |
| B5c-1930 | Milling Cutters, American Standard |
| B18c-1930 | Slotted Head Proportions Machine Screw Cap Screws and Wood Screws, American Standard |
| K13-1930 | Code for the Identification of Gas Mask Canisters, American Recommended Practice— <i>50 cents</i> |
| K14-1930 | Specifications for Liquid Soap, American Tentative Standard— <i>5 cents</i> |
| K16-1930 | Standard Methods of Routine Analysis of Dry Red Lead, American Standard— <i>25 cents</i> |
| M14-1930 | Use of Explosives in Bituminous Coal Mines, American Recommended Practice |

Ball Bearings Standards Approved by A S A

The proposed standards for annular ball bearings of the single row type (light, medium, and heavy series) and for ball and roller bearings of the wide type, have been approved by the A S A as American Standard and American Recommended Practice, respectively. This action follows approval by the Society of Automotive Engineers and the American Society of Mechanical Engineers, the sponsors.

Standardization of ball bearings was undertaken by the technical committee in 1919, the work being based on the existing ball bearing standards of the Society of Automotive Engineers. The committee cooperated extensively with foreign standardizing bodies in an effort to achieve international unity in this standard. An international conference was held in Zurich, Switzerland, in 1923 and another in New York in 1926. Differences between foreign and American practices were practically eliminated in 1928 and 1929, and the standard for annular ball bearings was approved by the sectional committee in November, 1928. The sectional committee took up the subject of the wide type of ball and roller bearings after a recommendation had been formulated by the National Electrical Manufacturers Association and passed on to the committee by the Society of Automotive Engineers.

full thread percentages. A sheet comparing in detail the proposed and present sizes is included with the proposed American Standard for ease of comparison with the present practices of industry.

Copies of the proposal together with supplementary tables giving the list of tap drill sizes included are available and may be obtained for review and criticism through the A S A office.

A S A Approves Standard for Milling Cutters

The American Standard for Milling Cutters (B5c-1930) has been approved by vote of the A S A Standards Council. The standard was prepared by technical committee number five of the general committee on Small Tools and Machine Tool Elements, sponsored by the American Society of Mechanical Engineers, the Society of Automotive Engineers and the National Machine Tool Builders Association. Mr. C. W. Machon of the Brown and Sharpe Manufacturing Company is chairman of the technical committee.

The standard covers nomenclature, profile, and formed milling cutters and keys and keyways and gives diameter, thickness, and other important dimensions.

The standard is now being printed, and orders will be accepted at any time at the A S A office.

Proposed Standard for Drills Available for Review

Technical committee number seven of the sectional committee on Small Tools and Machine Tool Elements has circularized for review and criticism by industry copies of the proposed American Standard for twist drill sizes and lengths. This proposal is based partly on suggestions received following the distribution of previous proposals for criticism and comment.

The present proposal covers a size range of 0.014 to 0.6875 ($\frac{11}{16}$) inch, and reduces the present total of 150 sizes to 107. In studying the present sizes listed in manufacturers' catalogs, the committee found in a number of instances two drills of different nominal diameters which produced, within close tolerances, the same size hole. The drill sizes now submitted are so arranged as to give progressive increases in diameter increments and requires the use of but 15 additional sizes. The committee has also prepared a table indicating the necessary tap drill sizes required to produce the several specified National Screw Thread Commission

Editor Sees A S A Work Promoting Economies

An appraisal of the position of the American Standards Association in the promotion of production and distribution economies appeared in an article in the *American Machinist* for January 2, 1930. The article, "Will Nineteen Thirty Be as Good as Nineteen Twenty-Nine?" cites the re-organization of the American Engineering Standards Committee and the underwriting of the American Standards Association as a step forward, and looks to the development of some real economies during the coming year. To quote:

"One of the real engineering achievements of 1929 was the reorganization of American standardization work. The American Standards Association, which supersedes the old American Engineering Standards Committee, will work along vastly simpler and more expeditious lines, and will have the great advantage of a fairly adequate budget. With standards work on an efficient basis we can look with confidence to some real production and distribution economies in 1930."

Slotted Head Proportions Now American Standard

A standard important to practically every machinery building and using industry, that for slotted head proportions (B18c-1930) has just been approved as an American Standard, and is now available through the A S A office. The standard covers machine screws, cap screws, and wood screws and contains tables of dimensions for the following types: flat head machine screws, round head machine screws, oval head machine screws, fillister head machine screws, flat head cap screws, button head cap screws, fillister head cap screws, round head wood screws, flat head wood screws, oval head wood screws, and brass and steel wood screws with flat, round, and oval heads. Both maximum and minimum figures are given for each dimension. Preferred screw lengths and preferred head types for various diameters are also shown in a table.

The standard was prepared by a sub-committee of the A S A sectional committee on bolt, nut, and rivet proportions. This committee was organized in 1923 under the sponsorship of the Society of Automotive Engineers and the American Society of Mechanical Engineers. Professor A. E. Norton is chairman of the general committee and Mr. E. W. Reed is chairman of the sub-committee. It is interesting to note that 14 drafts were prepared by the sub-committee before the final draft was approved. Some difficulty was experienced in obtaining unanimous approval due to the fact that one type of screw is manufactured by two different types of machines, one of which necessitates larger tolerances on several sizes of round head machine screws. The standard as approved for these sizes provides the larger tolerances.

Symbols for Heat and Thermodynamics

The proposed American Tentative Standard Symbols for Heat and Thermodynamics (Z10c) has been approved by the sectional committee on Scientific and Engineering Symbols and Abbreviations, and submitted for the approval by the sponsor bodies, American Association for the Advancement of Science, American Institute of Electrical Engineers, American Society of Civil Engineers, Society for the Promotion of Engineering Education and the American Society of Mechanical Engineers. The sub-committee which prepared the standard is under the chairmanship of Sanford Moss, representing the American Society of Mechanical Engineers and the Society for the Promotion of Engineering Education.

A S A Approves Standard for Cut and Ground Thread Taps

The American Standard for cut and ground thread taps (B5c-1930) has been approved by the A S A. The National Machine Tool Builders Association, the Society of Automotive Engineers and the American Society of Mechanical Engineers are sponsors for this project.

The standard, which covers machine screw taps, hand taps, taper taps, nut taps and pulley taps, was developed by a sub-committee under the chairmanship of Mr. Harry C. Pond of the general committee on the standardization of Small Tools and Machine Tool Elements.

The particular features of this new standard are: adoption of larger major diameters to allow for greater wear; increase in minimum pitch diameters on cut thread taps over $\frac{3}{4}$ inch diameter to compensate for lead error; adoption of a comprehensive standard for ground thread taps; and standardization of a number of elements not heretofore covered.

Numerous drafts of the proposed standard in preliminary form were distributed to industry for criticism and comment and the present proposal is a revision of the earlier drafts in accordance with the suggestions received. Copies of the standard will be available for sale within a few weeks and orders may be sent to the A S A office.

Specifications Used in Buying for Citrus Fruit Industry

The Fruit Growers Supply Company provides a cooperative purchasing organization for orchard and packing house supplies, and purchases such items as paper wraps, nails, labels, and box shooks in very large yearly quantities. For example, the company's purchases of tissue paper wraps for citrus fruits alone run to 5000 tons a year. The following is quoted from *The Purchasing Agent* for August, 1929:

"The facilities afforded manufacturers and dealers by the uniting of a large consumer demand through one office make for economy in selling and in purchasing as well; and this, to a greater extent than would otherwise be possible, tends toward standardization. It is of very great importance in the orderly distribution of supplies and the elimination of the necessity of carrying heavy inventories which cannot be avoided when many materials other than those of standard specification are used."

Code for Use of Explosives in Bituminous Coal Mines

A code dealing with the use of explosives in bituminous coal mines (M14-1930) was formally approved as American Recommended Practice by the American Standards Association on April 2nd. The A S A technical committee which prepared the code was organized in 1925 under the sponsorship of the Mine Inspector's Institute of America, with Mr. J. W. Paul, Bureau of Mines, as chairman. The committee was made up of 13 representatives of manufacturers, employers, employees, governmental regulatory bodies, independent specialists and insurance organizations.

The code covers: suitability of types of explosives and appliances for use in bituminous coal mines; handling and storing explosives on surface; transportation, handling, and storage underground; and methods and precautions for charging and firing, including inspection.

Work on the code was started after the organization of the Mining Standardization Correlating Committee in 1924, at which time the correlating committee laid out a broad program of standardization of safety requirements for mines in an effort to reduce the large number of serious accidents resulting from the lack of adequate safeguards.

Threads for Valve Stems

Following a proposal made to the A S A technical committee on screw threads that the threads for valve stems should be standardized, A. C. Taylor, general secretary of the Manufacturers Standardization Society of the Valve and Fittings Industry, advised the secretary of the technical committee: "I am authorized to advise you (a) that this Society is opposed to the standardization of valve stem threads for economic, financial, and practical reasons; and (b) that they, therefore, will not contribute financially, or otherwise, to the development or a promulgation of such a project if it is undertaken against their better judgment."

Government Grant for B E S A

The British government has increased to £3000 the former annual grant of £105 to the British Engineering Standards Association, as a result of a recommendation made last year by the Balfour Commission on Industry and Trade. Beginning with the year of 1931-1932 the government grant to the Association will be increased by £1 for every £3 that the Associa-

tion is able to raise by subscription from industry in excess of £13,000. The maximum total grant is limited to £5000 on any one year.

According to the *Financial Times*, London, for February 3, 1930:

"The government attaches great importance in the interests of British industry to the development of standardization, and as a condition of the grant expects the association to resume and energetically pursue the work of translating the principal British standard specifications in foreign languages."

Reprints Available

The following reprints have been received and may be obtained without charge from the A S A Information Service:

"How specifications bring savings," by F. J. Schlink. Paper read before the annual convention of the National Purchasing Agents, in Buffalo, New York, June 5, 1929.

"Standardization, some considerations concerning its development and practice in American industry," by John Gaillard, *Bulletin of the Taylor Society*, April, 1930.

"A scientific approach to institutional buying," by F. J. Schlink, *The Educational Buyer* for March, 1930.

"Improving purchasing methods through specifications," by F. J. Schlink, *American City Magazine*, April, 1930.

Buying for Educational Institutions

"Purchase by specification is coming into great prominence in institutional buying. The old thought that specifications limit the number of prospective suppliers thus increasing costs has been replaced by the new thinking that purchase by brand name is not only limiting but also inaccurate, giving rise to costly adjustments. Also brand names from a purchasing agent's point of view are meaningless so far as value received is concerned. The time expended in working out the definite and necessary qualities of materials purchased proves a good investment in lowered purchase prices. Such specifications after being compiled by the purchasing agent in cooperation with academic¹ and operating departments concerned should be checked with prominent vendors in the field to secure their criticism for improvements."—From editorial in *The Educational Buyer*, March, 1930.

¹ This refers to the use of specifications by colleges and other academic institutions.

STANDARDIZATION WITHIN THE COMPANY

Improvements Made to Fit Standardized Models

The opposing tendencies of accelerated obsolescence to assure quick turnover for the producer, and standardization for the economic benefit of the consumer, have been often noted in the financial and sales management press. A recent note in the *London Times* refers to a typesetting-machine of wide use, developed and extensively exploited on the basis of reversing the practice of previous firms in this industry. Instead of bringing out new models constantly when improvement of design or extension of scope of operation became necessary, the designers of the Intertype, it is stated, applied the principles of standardization and interchangeability to typecomposing-machines.

According to the report, the device has been so planned as to make it possible for a printer to acquire a composing machine with only the equipment needed at the time of purchase and add the further standardized units of equipment as they become necessary. Improvements made from time to time are also standardized and can be fitted to machines already in use. In this way, the makers of this device claim to safeguard the printer from undue depreciation of his purchase. They regard standardization as perhaps the most far-reaching and revolutionary improvement which they have made to the production and maintenance of typecomposing-machines, with obvious advantages in economy of upkeep and helping to meet the emergency due to breakage of parts or stoppage of operation.

New Accessories Fit Old Cars

In the field of automobile manufacture the makers of the Lincoln have adopted the regular practice of designing every Lincoln improvement or accessory in such a way that it will fit any car which the organization has manufactured. Likewise the Evinrude Company, until its recent marketing of the twin-cylinder outboard boat motor, is said to have made all of its improvements to its motors in such a way that they could be applied to motors already in use.

By way of contrast, the following is quoted from James Truslow Adams' recent book, "Our Business Civilization."

".... There is no reason why many of the mechanical contrivances we buy should not in themselves last many years. From

the standpoint of the producer there is always the danger that the consumer may have had enough of any particular article unless he is made to want more. This is accomplished in several ways in the technic which has been developed by psychologically trained sales experts. The consumer is cleverly induced to want an article that he thought he could do without or could not afford. If he has already owned one, as an automobile, the slogan becomes that every self-respecting family should have two. The model is changed every year and social vanity is played upon or an appeal is made to the powerful motives of fear, shame, and pride.

Essential Parts Discontinued

"In selling many of the mechanical contrivances a more brutal method is employed. Manufacturers stop making essential parts so as to require the owner to buy an entirely new and perhaps only slightly altered model. Some years ago, for instance, I bought at a cost of \$450 a certain instrument. It was good for a lifetime. I added steadily, as I could afford it, to the things that were to be used with it, and without which it was useless, until the whole investment was over \$800. One day when I went to get more, I was told they no longer made anything for that 'model,' I would have to get another and, of course, with a condescending tone that was almost a sneer, 'I must want to have the latest.' The new model differing only slightly from the old, cost, the salesman told me, as though it were a mere trifle, \$750. To accumulate the same things to go with it, that I had bought for the old would cost about \$400 more. My old investment was rendered worthless, and the salesman made it evident that he had no interest in a person so cheap that he would not casually throw away \$800 and spend \$1000 more on a toy. His company did not have the least glimmer of an idea of responsibility toward the public out of which it had made its money and which had made, in the aggregate, a colossal investment in its instruments."

Standards Help Curb Commercial Bribery

An interview with H. J. Kenner, Secretary of the Commercial Standards Council, reported in the *New York Times* refers to an amendment intended to put teeth into the present ineffectual New York State law against commercial bribery, a practice which, according to Mr. Kenner, adds millions of dollars to distribution expenses. He says:

"Commercial bribery has been rampant in many leading industries, including dyes and chemicals, ship chandlery, pen and ink, paint and varnish, to mention only a few. . . . Some companies allow as high as 10 per cent of the cost of goods for bribes. . . . in the form of actual money or expensive gifts. . . . shown on the company's books as 'entertainment expense.'"

As is well known to engineers and others particularly familiar with the use of standards and specifications, these afford the most potent medium for the prevention of the commercial bribery system, since they provide a criterion, apart from the individual purchaser's personal judgment, for the reliability and the performance of the goods sold, and make it practically necessary to buy on a basis of price rather than favoritism, without in the slightest impairing the purchaser's right to consider, with good reason, the question of the reliability of the supplier and his past record of performance as to quality, promptness of delivery, adjustment of claims, etc.

One case reported by Mr. Kenner where a textile dye company was found to be paying individuals in a customer's factory from \$30 to \$50 per month to recommend its product, amounting to a total of \$10,000 a year in this plant, would, of course, have resulted in an untenable situation if the dyes had been purchased upon controlled performance tests either in the laboratory or in plant production under the direction of technically trained personnel.

Attempts unfairly to influence purchase are, as is well known, particularly rife in industries where questions of taste and personal judgment enter with particular force. Meats, tea, coffee, and cocoa, canned goods, table ware, furniture, and hundreds of items of that kind have long been special hunting grounds for extra high pressure sales' activity of the kind referred to.

When, however, definite steps are made to put such purchases on the specification basis, as is possible in every one of the cases named, the situation clears up promptly, price and quality settle to recognized and acceptable levels, and business can be conducted upon businesslike criteria.

Standardization Helps Reduce Inventories

Standardization was described as one of the most important factors in decreasing inventories, by C. Oliver Wellington, C. P. A., in an article appearing in the March, 1930, issue of the *Accountant*, London. Referring to simplification and standardization, the article says:

"Simplification refers to the elimination of a needless variety of sizes, dimensions, and types of commonplace commodities, while standardization makes the simplified products conform to the proper technical requirements as regards physical characteristics or manufacturing methods. Together these policies result in the elimination of superfluous variety, and in the maintenance of inventories consisting of properly standardized items for which there is a constant demand."

Standardization of Chemicals

"One new movement quietly started in 1930 is that of the standardization of chemicals used in the manufacture of finishes for shoes and leather. It is not known at the moment whether or not the United States Bureau of Standards is cooperating in this movement. However, at least one firm has made a substantial appropriation of money for the purpose. It will set up certain standards for all the materials that it uses in its goods, and its chemist will see to it that all the materials it buys are up to the standards as fixed. Presumably, if materials are standardized the products made from them will be uniform, and if they are uniform, then shoemakers will be saved a lot of time and money in finishing shoes in factories."—From the *Enterprise*, Brockton, Mass., March 1, 1930.

Standardization Lowers Airplane Prices

"Stinson Aircraft Corporation, division of the Cord Corporation, has reduced the price of its new multi-motored transport plane to \$23,900 or \$18,000 below the former price. 'This reduction is made possible,' says William A. Mara, vice-president of Stinson, 'by the standardization of plane parts and accessories, and because of mass production in the Stinson plant. Undoubtedly, it will have an immediate effect in reducing costs to operators and will bring down fares within a short time.'"—From *Wall Street Journal*, February 21, 1930.